



Release Notes

SII for Empower 1.0 • December 2018

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1 Introduction

Thermo Scientific™ Standard Instrument Integration (SII) for Empower™ is an interface driver for controlling Thermo Scientific chromatography instruments¹ within Waters™ Empower™ software.

SII for Empower is built on the modern Thermo Scientific™ Chromeleon™ 7 Chromatography Data System framework. It is meant to serve as a replacement for DII for Empower™ as this product is based on Chromeleon 6 technology which will shortly reach its end-of-life.

Due to its new technology, SII for Empower also greatly enhances the usability of the system via a modern UI for online instrument control and instrument method editing.

¹ See List of Supported Instruments for currently supported modules.

2 Abbreviations

The following abbreviations are used throughout this document. Further explanations can be found in the chapters of use.

SII	Thermo Scientific™ Standard Instrument Integration – Driver interface framework that allows control of supported Thermo Scientific™ chromatography modules under various software environments, using the Chromeleon 7 framework.
DII	Dionex Instrument Integration – Driver interface framework that allows control of supported Thermo Scientific™ chromatography modules under various software environments, using the Chromeleon 6.8 framework.
SWFR-xxxx	Chromeleon and SII for Empower software feature request tracking ID
xxxxxx	Chromeleon and SII for Empower issue tracking ID
LAC/E	Laboratory Acquisition and Control / Environment
DAD	Diode array detector
PMT	Photo multiplier tube

3 Scope of this Document / Other Resources

The Release Notes describe the main features, list supported instruments and compatibility with Waters Empower and Windows operating systems for SII for Empower. If you require further information, for example, about installation, first steps, or troubleshooting, refer to one of the documents listed below.

List of Supported Instruments	Lists the instruments and modules that are supported with SII for Empower. Provides details of module specific limitations.
Installation Guide	Gives step-by-step instructions for installing and configuring Thermo Scientific SII for Empower, and describes all the requirements for installing SII for Empower (for example, PC and operating system requirements).
Quick Start Guide	Describes the basic operation of SII for Empower. Provides step-by-step instructions on how to control instruments and acquire data from HPLC and IC modules supported by SII for Empower via the Empower software.
SII for Empower Online Help	Provides information and help regarding the various options in SII for Empower which are specific to SII for Empower. Contains a section on troubleshooting helping to minimize the downtime of the instrument.
Certificate of Validation	Declaration that the product has been developed and tested according to the specification and appropriate standards.

Tip: The SII for Empower PDF documents are available on the SII for Empower installation disk in the folder Documents and also from the Windows start menu via Start -> Thermo SII for Empower -> Documents.

Chromeleon 7 Installation Guide	Components shared with Chromeleon 7 are automatically installed as part of the installation of SII for Empower, so no specific installation steps are required.
Chromeleon 7 Quick Start Guide	Describes the basic operation of Chromeleon 7. Functionality that is shared with SII for Empower is the Instrument Configuration Manager, the Instrument Method Wizard/Editor and the Instrument View.
Chromeleon 7 Online Help	Provides general information and help regarding the various options in SII for Empower which are shared with Chromeleon 7.

Tip: The Chromeleon 7 PDF documents are available from the Windows start menu via Start -> Thermo Chromeleon 7 -> Documents.

4 Product Features

SII for Empower 1.0 provides support for new chromatography instrumentation and improves on usability, features, and performance over Dionex Instrument Integration for Empower 1.16. The new modules/instruments and features are listed in this section.

SII for Empower replaces the former integration product DII for Empower and is recommended to be used for new installations. This ensures customers use the newest functionality and provides up to date integration into the existing IT infrastructure, e.g. Windows 10.

4.1 General

4.1.1 Single Installation Package

SII for Empower is provided as one package supporting all Empower installation types. See section 4.3 Compatibility for more information on this. The installation guide provided with the product gives detailed information on how to install, upgrade and uninstall successive versions of SII for Empower.

Internal reference: [CM-10711]

4.1.2 User Interface Improvements

As SII for Empower is based on Chromeleon 7 technology, it introduces new controls that allow for rapid method creation and editing. It also provides quick access to the most commonly used UI components and further details as appropriate.

INSTRUMENT METHOD EDITOR

SII for Empower introduces a new Instrument Method Editor that allows for a better overview of the module features most relevant for creating instrument methods. For many of the new modules introduced with SII for Empower (e.g. Vanquish modules), the new Instrument Method Editor allows the user to switch between Easy and Advanced views as appropriate. SII for Empower instrument method editors have been adapted to integrate seamlessly without the need for the scripting functionality known from DII for Empower.

Internal reference: [CM-10778]

CONTROL PANELS

Empower Control Panels and Chromeleon Instrument View are provided for all of the supported modules. The online controls have greatly been enhanced in order to allow a quick overview of the system as well as showing details as needed for checking system health or wellness counters.

Internal reference: [28348]

4.1.3 Increased Number of Chromatographic Systems

SII for Empower supports up to 4 chromatographic systems running in parallel on an Empower node. This has doubled the number of systems compared with DII for Empower which was limited to 2 systems per Empower node.

Internal reference: [CM-22808]

4.1.4 Single Module Support

SII for Empower allows for combining Thermo Scientific modules with other instrumentation supported by Empower only. Thus it is possible to use Thermo Scientific detectors (for example the Corona Veo) or pumps in conjunction with other instrumentation controlled in Empower. In such a configuration the data acquisition is triggered via a contact closure signal from the autosampler. Please refer to the online help for setting up such an SII Detector configuration.

Internal reference: [28748]

4.1.5 System Status Report

The System Status Report feature assists when troubleshooting a problem and will help to minimize the downtime of an instrument. It will collect data (IQ reports, instrument audit trails, Windows event logs, configuration reports etc.) relevant from an installation, and create a ZIP file which can then easily be sent via email to Thermo Scientific support.

Internal reference: [CM-10711]

4.1.6 Integration into Empower User Management

SII for Empower provides seamless integration into the user management of Waters Empower.

Internal reference: [29229]

Note: In some places (predominantly in Instrument View) the Chromeleon instrument audit trail is visible, which may list messages that contain user names. The user name shown there will be the user logged on to Windows, not the user logged on to Waters Empower.

4.2 Drivers

4.2.1 Thermo Scientific Instruments - Vanquish™

With this release, support for Vanquish modules is provided as follows. The list below provides a brief overview of the modules being supported. For detailed information please refer to the List of Supported Instruments and the online help provided with the product.

Internal reference: [28752]

- Binary Pumps:
 - VH-P10-A
 - VF-P10-A
- Quaternary Pump:
 - VF-P20-A
- Dual Gradient Pump:
 - VF-P32-A
- Autosamplers:
 - VH-A10-A
 - VF-A-10-A
- Dual Autosamplers:
 - VH-A40-A
 - VF-A10-A
- Column Compartment:
 - VH-C10-A
- Diode Array Detectors:
 - VH-D10-A
 - VF-D11-A
- Variable Wavelength Detector:
 - VF-D40-A
- Charged Aerosol Detectors:
 - VH-D20-A
 - VF-D20-A
- Fluorescence Detectors:
 - VF-D50-A
 - VF-D51-A

Note: Support is granted beginning from the initial hardware revision.

4.2.2 Thermo Scientific Instruments - UltiMate™ 3000

With this release, support for UltiMate 3000 modules is provided as follows. The list below provides a brief overview of the modules being supported. For detailed information please refer to the List of Supported Instruments and the online help provided with the product.

Internal reference: [28753]

- Binary Pumps:
 - HPG-3200RS, HPG-3400RS
 - HPG-3200SD, HPG-3400SD
 - HPG-3200BX
- Quaternary Pumps:
 - LPG-3400RS
 - LPG-3400SD, LPG-3400SDN
 - LPG-3400BM
- Isocratic Pumps:
 - ISO-3100SD
 - ISO-3100BM
- Dual Pumps:
 - DGP-3600RS
 - DGP-3600SD, DGP-3600SDN
 - DGP-3600BM
- Nano/Capillary Pumps:
 - NCP-3200RS, NCS-3500RS
 - **Note:** This includes support for both the classic (800 bar) and ProFlow (900 bar) flow meters.
- Autosamplers:
 - WPS-3000x
 - **Note:** All variants of the WPS-3000 Autosampler are supported.
 - ACC-3000, ACC-3000T
- Thermostatted Column Compartment:
 - TCC-3000RS
 - TCC-3000SD
 - **Note:** This also includes support for the user-installable valves available for these modules.
- Diode Array Detectors:
 - DAD-3000
 - DAD-3000RS
- Multiple Wavelength Detectors:
 - MWD-3000
 - MWD-3000RS
- Variable Wavelength Detectors
 - VWD-3100
 - VWD-3400RS
- Fluorescence Detectors
 - FLD-3100
 - FLD-3400RS

- Charged Aerosol Detectors:
 - Corona Ultra RS
 - Corona Veo RS
 - Corona Veo
- pH and Conductivity Monitor
 - PCM-3000 (module for use with the Diode Array, Multiple Wavelength, and Variable Wavelength Detectors)

4.2.3 Thermo Scientific Dionex - ICS-6000

This release introduces support for ICS-6000 system. For detailed information please refer to the List of Supported Instruments and the online help provided with the product.

Internal references: [28347, 26507, 26508, 29271]

- Pumps:
 - Single Pump (SP)
 - Dual Pump (DP)
- Autosamplers:
 - AS-AP
 - AS-DV
- Detectors:
 - Conductivity Detector (CD)
 - Electrochemical Detector (ED)
- Other Modules:
 - Chromatography Compartment (DC Detector/Chromatography Compartment)
 - Eluent Generator (EG)
 - Consumable Device Monitor (CDM)

4.2.4 Other Drivers

- A2D Converter: Internal reference: [29105]
 - A2D (analog and digital input device)
- Empower Link Driver: Internal reference: [CM-10877]
 - The Empower Link driver allows for easy configuration of systems in Empower by interacting with the Waters DHCP Server on the local Empower node.

4.3 Compatibility

4.3.1 Waters Empower

Version 1.0 of SII for Empower has been validated for use with Waters Empower 3, Feature Release 4. It supports all Empower installation types, i.e. Empower Personal Workstation, Empower Workgroup and Enterprise client/server.

When migrating from DII for Empower to SII for Empower it is suggested to keep an independent installation of DII for Empower for full reporting functionality. While reports on chromatographic results previously gathered with DII for Empower can still be retrieved, some reporting functionality (e.g. instrument method content) is limited.

Internal reference: [CM-10711]

4.3.2 Chromeleon 7

Version 1.0 of SII for Empower is based on Chromeleon 7.2.9 technology.

Internal reference: [CM-10711]

4.3.3 Microsoft Windows

Version 1.0 of SII for Empower is compatible with Windows 10 Build 1803 (Professional + Enterprise x64 English) as well as Windows Server 2012 R2 (x64 English).

Internal reference: [CM-17037]

4.3.4 Citrix XenApp

Version 1.0 of SII for Empower has been tested and validated to be compatible with Citrix XenApp 7.6 installed on Windows Server 2012 R2 (x64 English).

Internal reference: [28350]

5 Known Limitations

Currently, Thermo Scientific Standard Instrument Integration for Empower version 1.0 has the following limitations:

5.1 Instrument Control

5.1.1 Configuring Trays (Plate Types)

The layout of your HPLC autosampler and the location of your samples must be defined in Empower. This requires the operator to select plate types or trays used in the autosampler for sample injection. The plate type defines both the overall plate dimensions and the number and dimensions of the sample wells the plate contains. Currently, Thermo Scientific Standard Instrument Integration for Empower cannot automatically add the different Thermo Scientific autosampler trays to the list of Plate Types in Empower. Instructions describing how to manually configure the plates/trays are provided in the SII for Empower help and Quick Start Guide.

Note: Once you create plate types, they are available to all projects.

Note: 10 and 22 Prep Vial trays are currently not supported.

Note: 10 ml Poly Vials are currently not supported.

5.1.2 Other Module-specific Limitations

For limitations specific to a module please refer to the List of Supported Instruments.

5.2 Data Acquisition and Storage

5.2.1 Instrument Methods

Avoid using the 'Remove Equilibration Stage' button on the pump gradient page of the Instrument Method Editor. Methods without this stage will fail when executing Monitor Baseline and/or Setup Method. More details are available in the online help.

5.2.2 Single Module Support

When operating the Corona Veo alongside Acquity modules some controls in the Instrument Method Editor will not be shown – thus leading to all channels being acquired.

Internal reference: [35679]

5.2.3 Vanquish VWD Setup Method

The Setup Method operation will lead to an error in the Empower Message Center when being executed on an Instrument containing a Vanquish VWD.

Internal reference: [35768]

5.2.4 Monitor Baseline/Setup Method

During Monitor Baseline, 3D data are not acquired.

5.2.5 Sample Functions

The Empower sample functions 'Equilibrate', 'Condition Column', 'Inject Immediate Standards' and 'Inject Immediate Samples' must not be used when using an SII Detector configuration, for example a Thermo Scientific Corona Veo in combination with a Waters HPLC. More details are available in the online help.

5.3 Method Import from DII for Empower

SII for Empower does not provide means for importing instrument methods which were created with DII for Empower.

5.4 Instrument IQ and OQ

The instrument IQ and OQ for modules controlled through SII cannot be done within Waters Empower.

For an SII System (all modules controlled within SII) the instrument IQ/OQ can be executed within Chromeleon. A Chromeleon installation and license is needed.

For an SII Detector (a single module controlled within SII), instrument IQ/OQ is not supported.

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